

AMENDMENTS TO THE CLAIMS

Kindly cancel claims **7, 16 and 18** and amend claims **1, 5, 8, 10, 12, 13 and 14**. This listing of claims will replace all prior versions, and listings of claims in the application.

LISITING OF CLAIMS

- 1 Claim 1 (currently amended). A parallel plate diode, comprising:
- 2 two thin plate metal electrodes and a semiconductor materials material layer
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3 contacting said metal electrodes, wherein the two thin plate metal electrodes made of
4 metal are disposed in parallel, wherein and a layer of thin plate the semiconductor
5 material layer is sandwiched between the two thin plate electrodes, wherein the
6 concentration of the carriers in the semiconductor material layer is 20% or less than that
7 of the electrons in the metal, one of the metal electrodes is made so as to have a
8 plurality of recesses from its surface into the interior on the side that faces the
9 semiconductor ~~eaat~~ material layer, wherein the diameter of those recesses is less than
10 4 micrometers.
- 1 Claim 2 (original). The parallel plate diode according to claim 1, wherein said recesses
2 are well-shape cavities.
- 1 Claim 3 (original). The parallel plate diode according to claim 2, wherein said cross
2 section of the well-shape cavity is a circular, a square, rectangle or an irregular curve.
- 1 Claim 4. (original) The parallel plate diode according to claim 2, wherein said cross
2 section of the well-shape cavity is groove-shape.

1 Claim 5 (currently amended). The parallel plate diode according to claim 2, wherein said
2 cross section of the well-shape cavity is in the form of an array of ~~projections in which~~
3 convex portions and concave portions ~~are staggered each other.~~

1 Claim 6. (original) The parallel plate diode according to ~~previously any one of claims~~
2 claim 1, 2, 3, 4, or 5, wherein ~~said two walls of the well-shape cavity or groove-shape~~^{1.7 in Clms}
3 are made of two substances, eΦ1 and eΦ3 respectively represent the power function of
4 the two walls of the well cavity, they satisfy the following relation:

5 $\Phi_1 < \Phi_3$

1 Claim 7 (cancel)

1 Claim 8. (currently amended) The parallel plate diode according to claim 1, wherein said
2 parallel plate diode is attached to [[the]] an insulated substrate.

1 Claim 9. (original) The parallel plate diode according to claim 8, wherein said parallel
2 plate diode is attached to a glass substrate.

1 Claim 10. (currently amended) The parallel plate diode according to claim 9, wherein
2 [[said]] the metal electrode having the well-shape cavity of each diode is coupled to
3 [[the]] a germanium electrode of [[the]] an adjoining diode having the same structure,
4 thus forming a parallel plate diode in series structure.

1 Claim 11 (previously presented). The parallel plate diode according to claim 1, wherein
2 one or more of said metal electrodes is made by ~~kovar alloy from an alloy of iron, nickel~~
3 and cobalt having a thermal expansion coefficient of about 3×10^{-6} .

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Cont.

1 Claim 12 (currently amended). The parallel plate diode according to claim 11, wherein
2 said each of the metal kevar-alloy electrodes having has one or more well-shape
3 cavities, the well-shape cavities of the two electrodes having identical structures so that
4 they can be joined together to of such diodes can join the kevar-alloy substrate of the
5 ether diode having identical structure so that they form a parallel plate diode in series.

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cont: 1 Claim 13 (currently amended). The parallel plate diode according to claim 1, wherein
2 there are recesses on the surface surfaces [[where]] wherein the two metal electrodes
3 that make up the parallel plate diode contact the semiconductor material, and wherein
4 the average diameter of the recesses on one side of the semiconductor material is
5 equal to or smaller than 0.7 micrometer while the average diameter of the recesses on
6 the other side is bigger than 0.7 micrometer.

1 Claim 14 (currently amended). The parallel plate diode according to claim 13, wherein
2 [[said]] the surface of the two electrodes have recesses with different depths.

1 Claim 15. (original) The parallel plate diode according to claim 13, wherein said the
2 surface of the two electrodes have recesses with different shape.

1 Claim 16 (cancel)

1 Claim 17 (previously presented). The parallel plate diode according to claim 1, wherein
2 said semiconductor material is liquid semiconductor material.

1 Claim 18 (cancel)